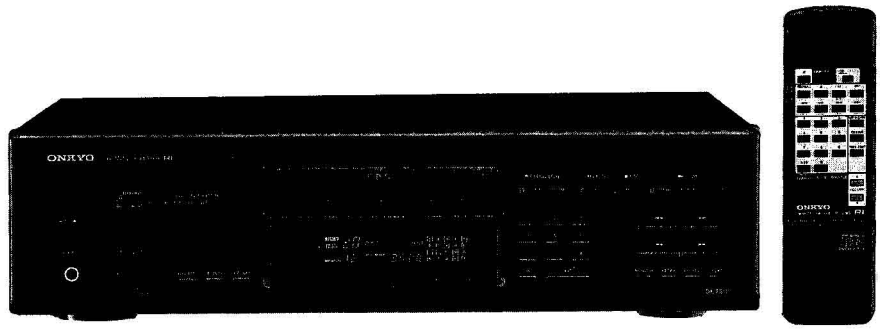
Ref. No. 0M3507

ONKYO® SERVICE MANUAL

COMPACT DISC PLAYER
MODEL DX-7310



Black model

BMP	230V AC, 50Hz
BMW	120/220V AC, 50/60Hz

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ ON THE SCHEMATIC DIAGRAM AND IN THE PARTS LIST ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE THESE COMPONENTS WITH ONKYO PARTS WHOSE PARTS NUMBERS APPEAR AS SHOWN IN THIS MANUAL.

MAKE LEAKAGE-CURRENT OR RESISTANCE MEASUREMENTS TO DETERMINE THAT EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

SPECIFICATIONS

Compact Disc Player	Model DX-7310
Signal readout system:	Optical non-contact
Reading rotation:	About 500 - 200 r.p.m. (constant linear velocity)
Linear velocity:	1.2 - 1.4 m/s
Error correction system:	Cross Interleave Reed-Solomon code
D/A converter:	1 bit PWM ACCUPULSE D/A CONVERTER
Sampling frequency:	352.8 kHz (Eight-times oversampling)
Number of channels:	2 (stereo)
Frequency response:	5 Hz - 20 kHz
Total harmonic distortion:	0.004 % (at 1 kHz)
Dynamic range:	96 dB
Signal to noise ratio:	100 dB
Channel separation:	90 dB (at 1 kHz)
Wow and Flutter:	Below threshold of measurability
Output level:	2 volts r.m.s.
Headphone jack:	1 Optimum load impedance 8 to 200 ohms
Power consumption:	13 watts
Power supply rating:	European and Australian models: AC 230 V, 50 Hz USA and Canadian models: AC 120 V, 60 Hz Worldwide model: AC 120 V and AC 220V switchable, 50/60 Hz
Dimensions (W × H × D):	455 × 120 × 308 mm (17-15/16" × 4-3/4" × 12-1/8")
Weight:	4.8 kg, 10.6 lbs.

ONKYO
AUDIO COMPONENTS

Specifications and external appearance are subject to change without notice because of product improvements.

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SERVICE PROCEDURES

1. Safety-check out

After correcting the original service problem,perform the following safety check before releasing the set to the customer:

Connect the insulating-resistance tester between the plug of power supply cord and chassis.

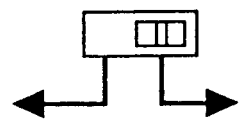
Specifications:More than 10Mohm at 500V.

2. Voltage Selector (Back panel)

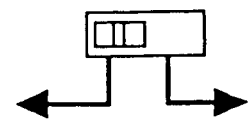
Worldwide models are equipped with a voltage selector to conform with local power supplies.Be sure to set this switch to match the voltage of the power supply in user's area before turning the power switch on.

Voltage is changed by sliding the groove in the switch with a screw driver to the right or left.

Confirm that the switch has been moved all the way to the right or left before turning the power switch on.



at AC120V



at AC220V

CAUTION ON REPLACEMENT OF OPTICAL PICKUP

The laser diode in the optical pickup block is so sensitive to static electricity,surge current and etc, that the components are liable to be broken down or its reliability remarkably deteriorated.

During repair,carefulley take the following precautions. (The following precautions are included in the service parts.)

PRECAUTIONS

1.Ground for the work-desk.
Place a conductive sheet such as a sheet of copper (with inpedance lower than 10MΩ) on the work-desk and place the set on the conductive sheet so that the chassis.

2.Grounding for the test equipment and tools.
Test equipments and toolings should be grounded in order that their ground level is the same the ground of the power source.

3.Grounding for the human body.
Be sure to put on a wrist-strap for grounding whose other end is grounded.
Be particularly careful when the workers wear synthetic fiber clothes, or air is dry.

4.Select a soldering iron that permits no leakage and have the tip of the iron well-grounded.

5.Do not check the laser diode terminals with the probe of a circuit tester or oscilloscope.

PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

WARNING!!

WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMMISION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 30cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.

Laser Diode Properties

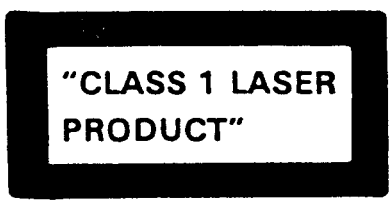
- Material: GaAlAs
- Wavelength: 760~800nm
- Emission Duration: continuous
- Laser output: max. 0.5mW*

  *This output is the value measured at a distance about 1.8mm from the objective lens surface on the Optical Pick-up Block.

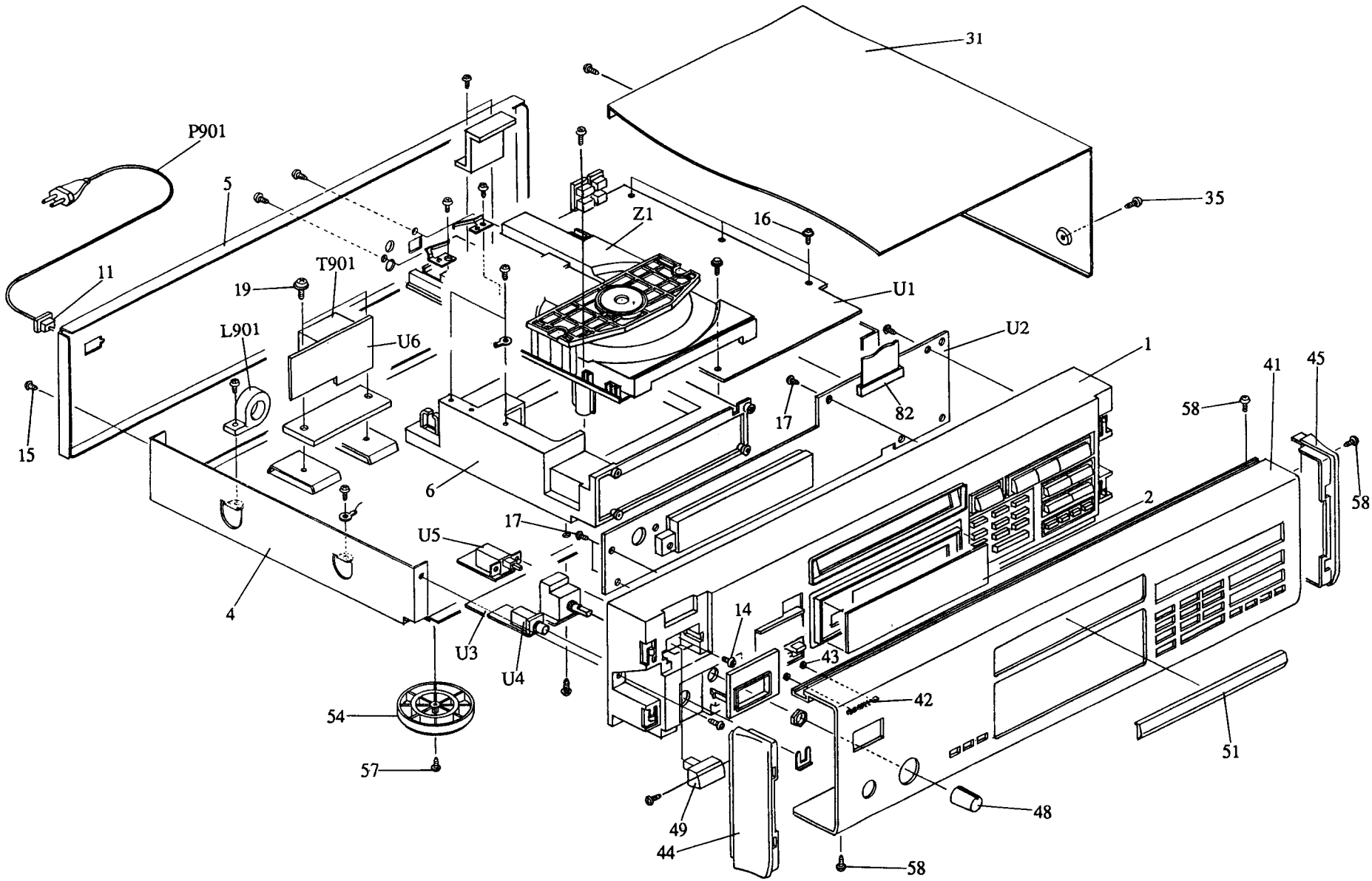
LASER WARNING LABEL

These labels are located on the mechanism.

DANGER —INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED. AVOID DIRECT EXPOSURE TO BEAM.
CAUTION —HAZARDOUS LASER AND ELECTROMAGNETIC RADIATION WHEN OPEN AND INTERLOCK DEFEATED.
ATTENTION —RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT AVEC L'ECLENCHEMENT DE SECURITE ANNULE.
VARNING
OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD. BETRAKTA EJ STRÅLEN.
VARO!
AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTÖMÄLLE LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
ADVARSEL: USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAF-BRYDER ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
ADVARSEL
USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES OG SIKKERHEDSLÅS BRYTES. UNNGÅ EKSPONERING FOR STRÅLEN.
SN 29361581Y



EXPLODED VIEW



PARTS LIST

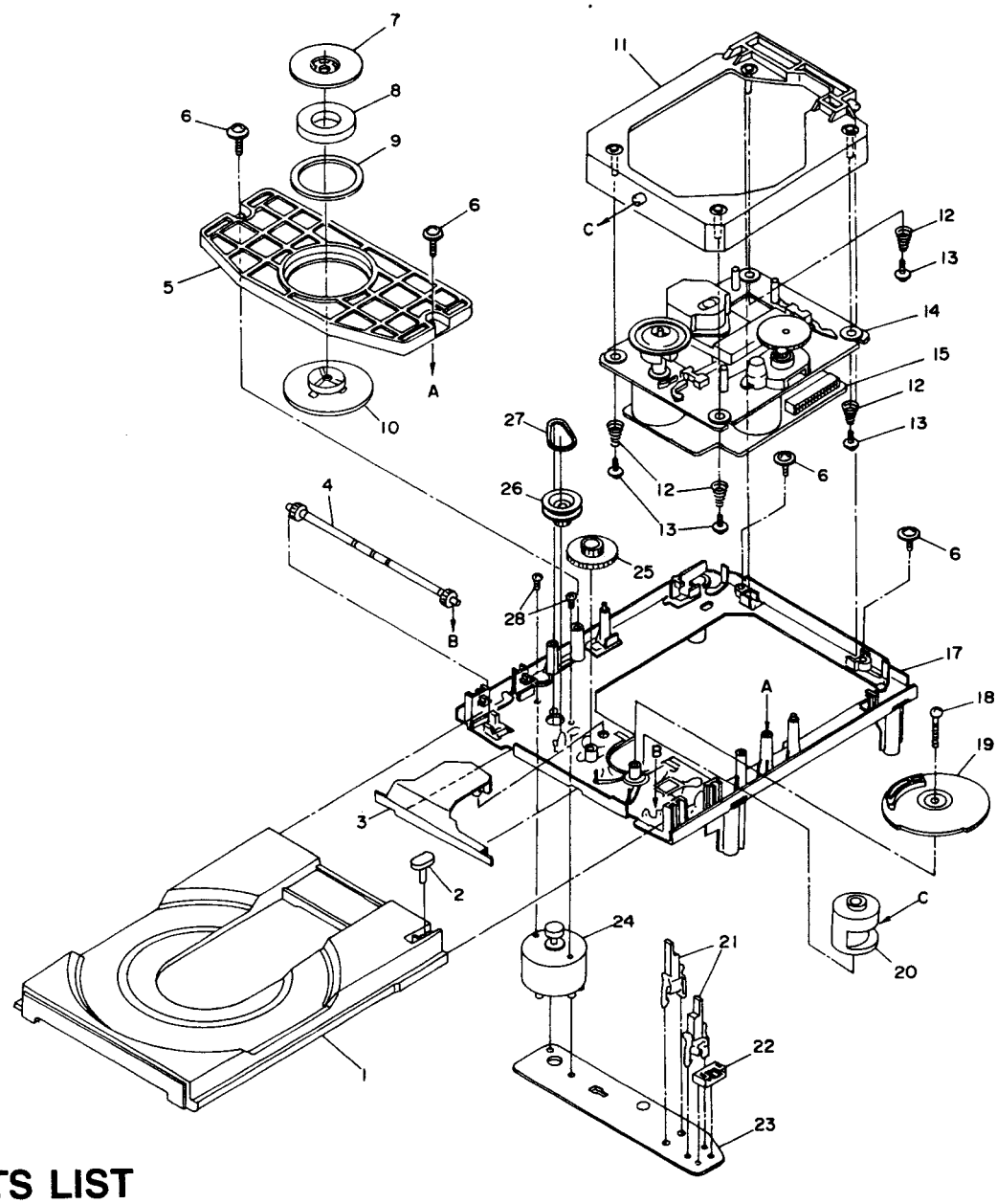
REF NO.	PART NO.	DESCRIPTION
1	27110776AY	Front bracket ass'y
2	28191662Y	Clear plate
4	27100227DY	Chasis
5	27122031Y	Rear panel<P>
	27122132Y	Rear panel<W>
	27122101Y	Rear panel<T>
6	27190928AY	Holder M
11	27300750	⚠ Bushing
14	82143006	3P+6FN(BC)Pan head screw
15	838130088	3TTW+8B Self-tapping screw
16	831130088	3TTW+8B Self-tapping screw
17	833430080	3TTP+8P(BC) Self-tapping screw
18	831430100	3TTW+10P(BC) Self-tapping screw
19	830440109	4TTC+10P(BC) Self-tapping screw
20	834430108	3TTS+10B(BC) Self-tapping screw
31	28184479AY	Top cover
35	838430088	3TTB+8B(BC) Self-tapping screw
41	27211689Y	Front Panel
42	28135199Y	BADGE
43	8910301	Ring CS
44	28125248-6Y	End cap L
45	28125249-6Y	End cap R
48	28324845BY	Knob,level
49	28324140Y	Knob,power
51	28148304	Door
54	27175292Y	Leg
57	838130088	3TTB+8B Self-tapping screw
58	833430080	3TTP+8B(BC) Self-tapping screw
82	2047221012Y	Flat Cable

REF NO.	PART NO.	DESCRIPTION
L901	230915	⚠ RBD25HA-00,Core
P901	253175Y	⚠ AS-CEE, AC CORD
T901	2300988BY	⚠ NPT-1199P, Power Transformer<P>
	2300990BY	⚠ NPT-1199DG, Power Transformer, <W>
U1	1H260522-1Y	NAAR-5222-1,Main circuit PC board ass'y
U2	1H260523-1Y	NADIS-5223-1,Display circuit PC board ass'y
U3	1H260524-1Y	NAAF-5224-1,Headphone amplifier PC board ass'y
U4	1H260525-1Y	NAAF-5225-1,Headphone terminal PC board ass'y
U5	1H260526-1Y	NAPS-5226-1,Power switch PC board ass'y
U6	1H260527-1Y	NAPS-5227-1,Power transformer PC board ass'y<P>
	1H260522-1AY	NAPS-5227-1A,Power transformer PC board ass'y, <W>
U7	1H260528-1Y	NASW-5228-1,Voltage selector switch PC board ass'y, <W>
Z1	24800009C	NCD-130S,CD Mechanism ass'y

<P>:230V model only
<W>:World wide model only
<T>:Taiwanese model only

NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.

MECHANISM-EXPLODED VIEW

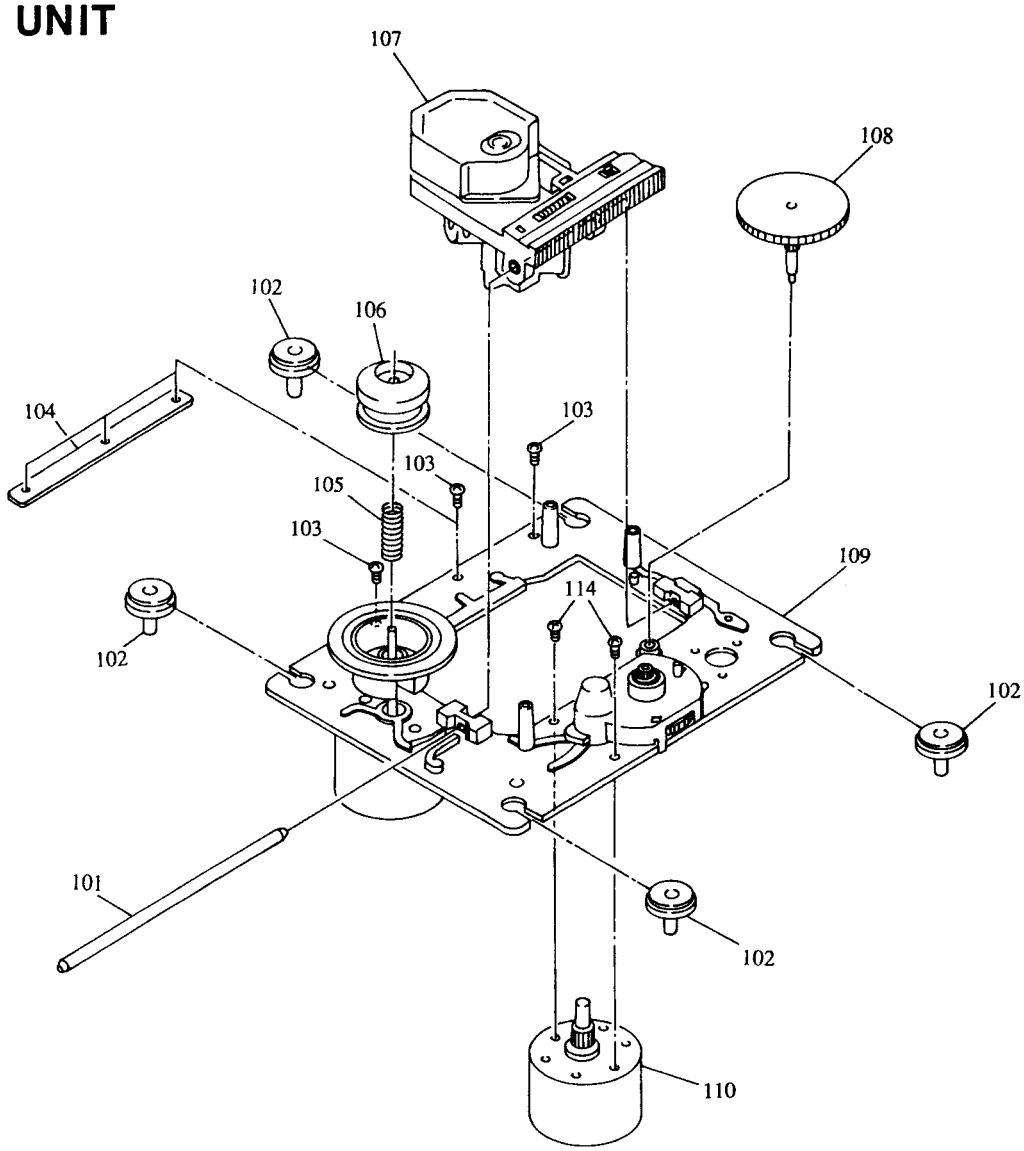


PARTS LIST

REF.NO.	PART NO.	DESCRIPTION
1	24840060	Tray
2		Stopper
3	24822014	Gear cover
4	24810020	Tray gear
5	24840061	Chucking plate
6		2.6TTW+7B,Self-tapping screw
7	24830003	Chucking yoke
8	24832004	Magnet
9	24836013	Damper
10	24810024	Chucking P
11	24802012	Sub chassis
12	24820023	Spring
13	24840062	Screw with washer
14		KSM-2401,Pickup drive unit
15	24840075	CD servo pc board ass'y
17	24802013	Main chassis
18		2.6TTW+16B,Self-tapping screw
19	24810021	Drive gear
20	24840063	Control cam

REF.NO.	PART NO.	DESCRIPTION
21	24840064	Leafswitch
22	25055369	NPLG-5P352,Plug
23	24840066	Loading motor pc board
24	24840067	Loading motor
25	24810022	Middle gear
26	24810025	Loading
27	24816008	Belt
28		2.6B+2.5F,Screw
101	24828006	Sled shaft
102	24836014	Insulator
103	24840068	2×5,Special screw
104	24822015	Plate S
105	24820024	Spring
106	24824003	Center ring
107	24110011	KSS-240A,Optical pickup
108	24810023	Wheel
109	24802014	Chassis
110	24804012	Motor gear ass'y
114	82112003	2P+3FN,Pan head screw

DRIVE UNIT



REMOVEMENT OF TRAY ASS'Y

Remove the top cover.

Turn the locked screw to the clockwise to release the lock of gear.(Refer fig.1)

Pull out the tray ass'y.

Remove the stopper.(Refer fig.2)

Press the tray stopper to the arrow mark direction and remove the tray ass'y.

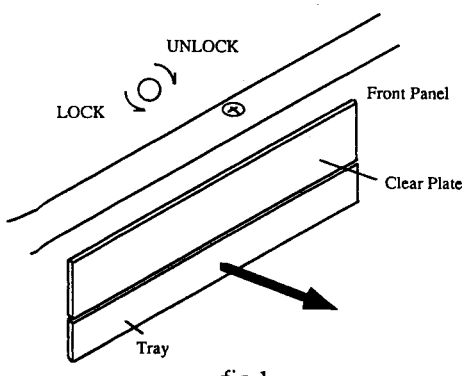


fig.1

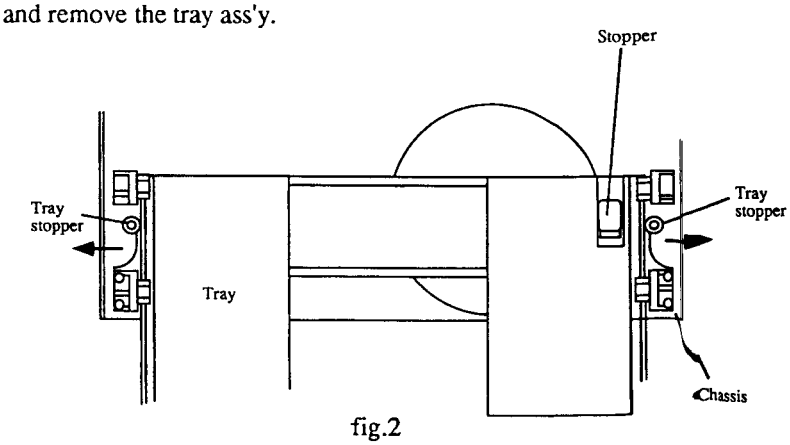
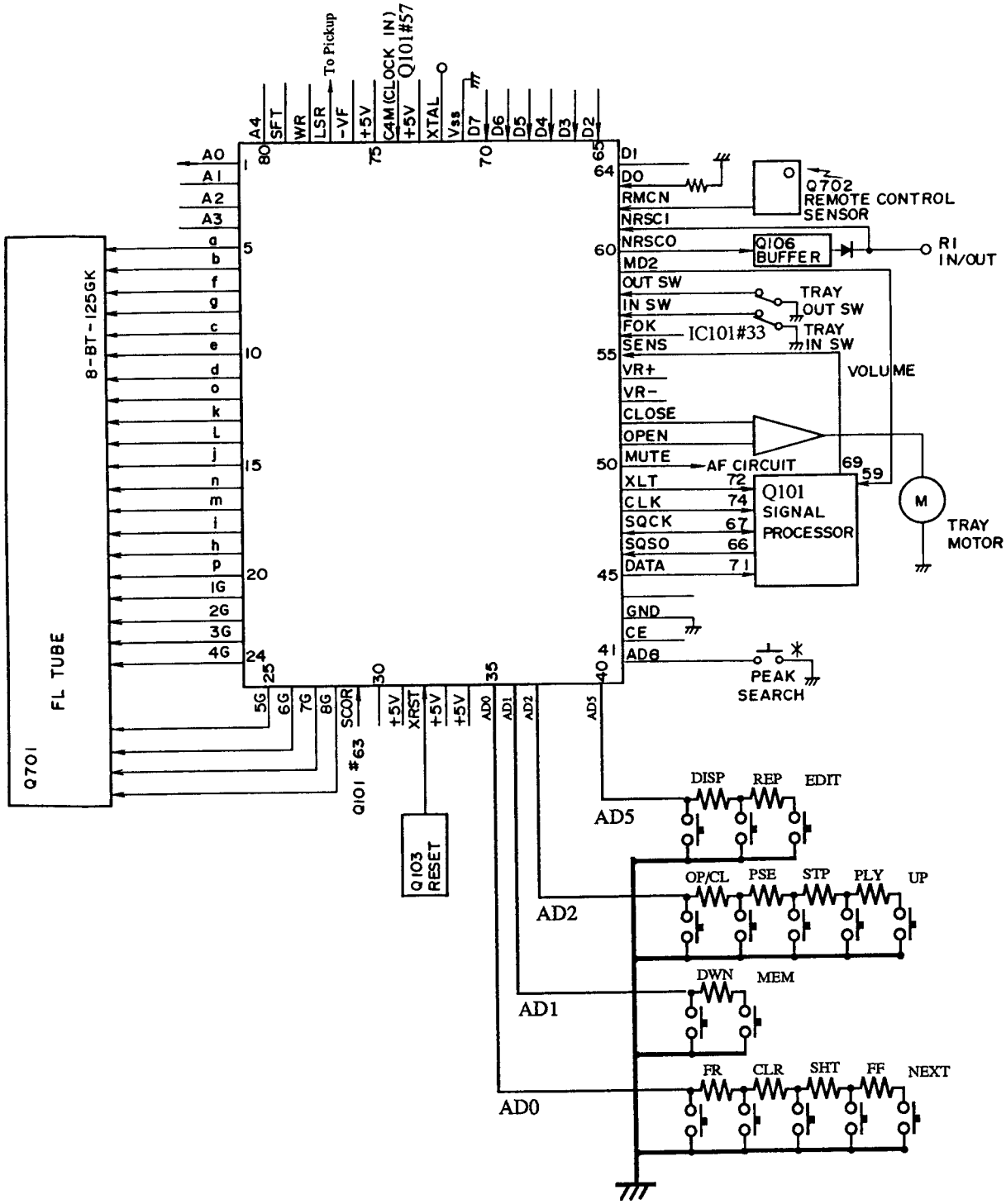


fig.2

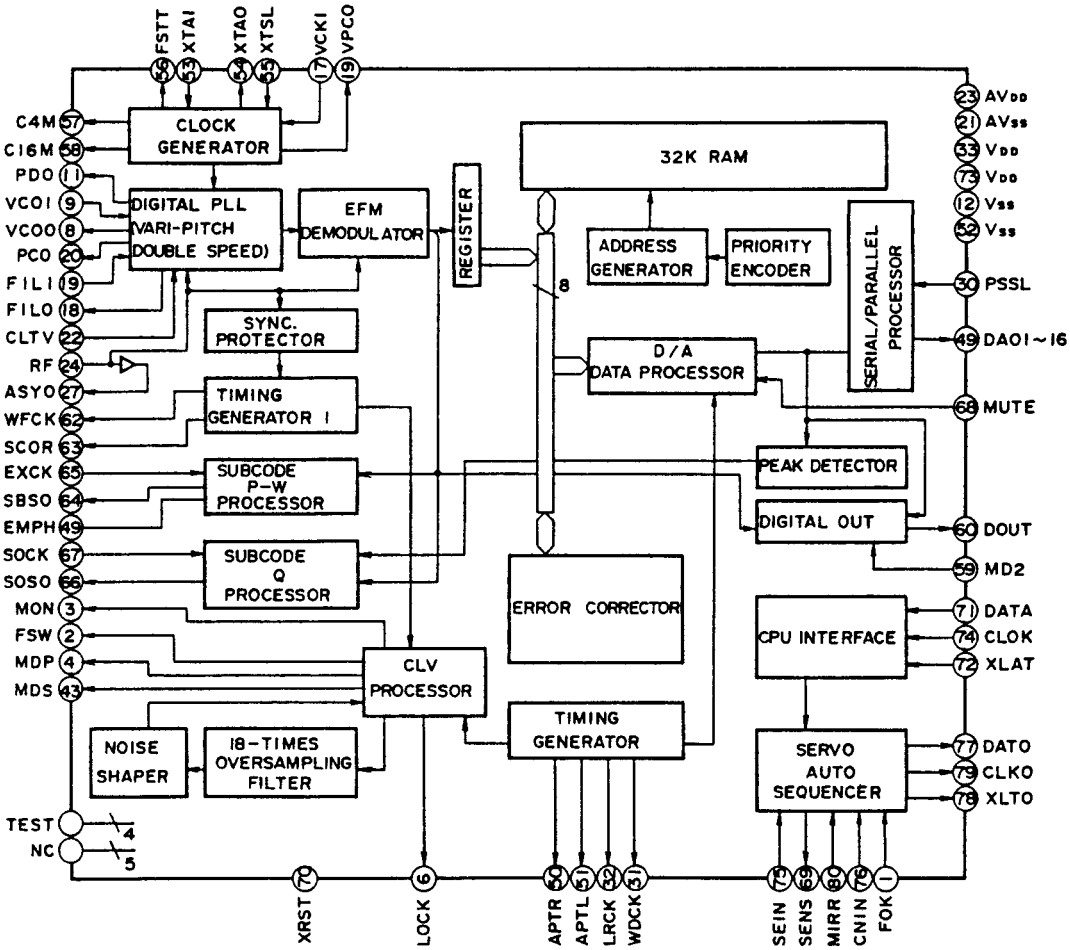
MICROPROCESSOR CONNECTION DIAGRAM

CXP50116-527 (Microprocessor)



Pin No.	Symbol	Description
1	DFTSW	Connect to pickup block.
2～4	A1～A3	Not used.(Open)
5～20	a～p	FL tube segment output.
21～28	1G～8G	FL tube grid output.
29	SCOR	Synchronizing signal detection of sub code frame.
30		Not used.(Open)
31	+5V	
32	XRST	Reset input terminal. Reset at the low level.
33	+5V	
34	+5V	
35～41	AD0～AD6	AD input terminal. Connect to the operation key.
42	CE	Chip enable terminal.
43	GND	
44		
45	DATA	Serial data output of command to signal processor IC.
46	SQSO	Serial data input of sub code Q from signal processor IC.
47	SQCK	Serial transfer clock of sub code Q to signal processor IC.
48	CLK	Serial transfer clock of command to signal processor IC.
49	XLT	Serial transfer latch to signal processor IC.
50	MUTE	Muting ON/OFF control output terminal. ON at the high level.
51	OPEN	Tray open/close control output.
52	CLOSE	Tray open/close control output.
53	VR−	Not used.(Open)
54	VR+	Not used.(Open)
55	SENS	Sense input from signal processor.
56	FOK	Focus OK input.
57	INSW	Tray close operation completion signal.
58	OUTSW	Tray open operation completion signal.
59	MD2	Inhibiting signal of digital output of signal processor.
60	NRSCO	NRSC output.
61	NRSCI	NRSC input.
62	REM	Remote control signal input terminal.
63～70	D0～D7	Not used.(Open)
71	Vss	Ground terminal.
72	XTAL	System clock output terminal.
73	+5V	
74	C4M	System clock input terminal.
75	+5V	
76	−VF	Negative power supply terminal for FL tube.
77	LSR	Optical pickup control output terminal. ON at the low level.
78	WR	Not used.(Open)
79	SFT	Not used.(Open)
80	A4	Not used.(Open)

CXD2500BQ (Digital Signal Processor)



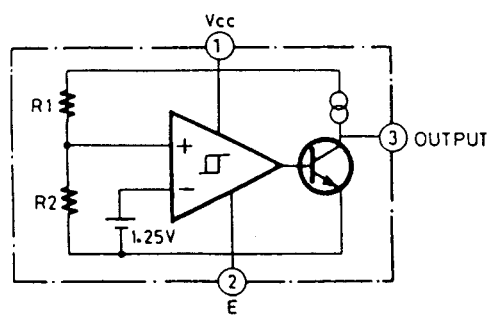
NO.	SYMBOL	I/O	DESCRIPTION
1	FOK	I	Foucs Ok input
2	FSW	O	Output filter changeover output for spindle motor
3	MON	O	Spindle motor control output
4	MDP	O	Spindle motor servo control
5	MDS	O	Spindle motor servo control
6	LOCK	O	H when GFS is the high level
7	NC		
8	VCOO	O	Oscillation circuit output for analog EFM PLL.
9	VCOI	I	Oscillation circuit input for analog EFM PLL. (8.6436MHz)
10	TEST	I	Test terminal
11	PDO	O	Charge pump output analog EFM PLL
12	Vss		Ground terminal
13-15	NC		
16	VPCO	O	PLL charge pump output for variable pitch
17	VCKI	I	Clock input for variable pitch from VCO (16.934MHz)
18	FILO	O	Filter output for master PLL.
19	FILI	I	Filter input for master PLL.
20	PCO	O	Charge pump output of master PLL
21	AVss		Analog ground
22	CLTV	I	VCO control voltage input for master
23	AVDD		Analog section power supply (+5V)
24	RF	I	EFM signal input
25	BIAS	I	Asymmetry circuit constant current input
26	ASYI	I	Asymmetry comparator voltage input
27	ASYO	O	EFM full swing output
28	ASYE	I	Asymmetry control circuit
29	NC		
30	PSSL	O	Audio data output mode changeover input Serial data at L and paraller data at H.
31	WDCK	I	D/A interface for 48 bits slot. Word clock f=2Fs.
32	LRCK	I	D/A interface for 48 bits slot. LR clock f=Fs.
33	VDD		Power supply terminal (+5V)
34-49			Data output terminals

			PSSL=1	PSSL=0
34	DA16	O	DA16	Serial data of 48 bits slot
35	DA15	O	DA15	Bit clock of 48 bits slot
36	DA14	O	DA14	Serial data of 64 bits slot
37	DA13	O	DA13	Bit clock of 68 bits slot
38	DA12	O	DA12	LR clock of 68 bits slot
39	DA11	O	DA11	GTOP output
40	DA10	O	DA10	XUGF output
41	DA09	O	DA09	XPLCK output

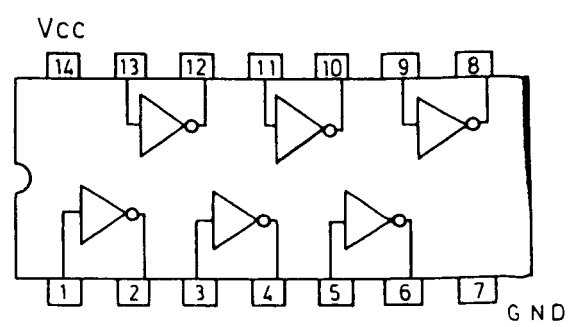
NO.	SYMBOL	I/O	DESCRIPTION	
42	DA08	O	DA08	GFS output
43	DA07	O	DA07	RFCK output
44	DA06	O	DA06	C2P0 output
45	DA05	O	DA05	XRAOF output
46	DA04	O	DA04	MNT 3 output
47	DA03	O	DA03	MNT 2 output
48	DA02	O	DA02	MNT 1 output
49	DA01	O	DA01	MNT 0 output
50	APTR	O	Control output for aperture correction. H when R ch.	
51	APTL	O	Control output for aperture correction. H when L ch.	
52	Vss		Ground terminal	
53	XTAI	I	Crystal oscillation circuit input of 16.9344MHz or 33.8688MHz input.	
54	XTAO	O	Crystal oscillation circuit output of 16.9344MHz.	
55	XTSL	I	Crystal selection input terminal. L when 16.9344MHz. H when 33.8688MHz.	
56	FSTT	O	2/3 divided output of pins 53 and 54.	
57	C4M	O	4.2336 MHz output	
58	C16M	O	16.9344 MHz output	
59	MD2	I	Digital output control input. On at high level.	
60	DOUT	O	Digital output	
61	EMPH	O	Emphasis control output. Active high.	
62	WFCK	O	Write frame clock output	
63	SCOR	O	Sub-code detection output. H when is detected SO or SI.	
64	SBSO	O	Serial output of sub-code (P~W)	
65	EXCK	I	Clock input for read out SQSO.	
66	SQSO	O	Sub Q 80 bits, PCM peak, and level data 16 bits output.	
67	SQCK	I	Clock input for read out SQSO	
68	MUTE	O	Muting control output. Active H.	
69	SENS		Sens output. Output to the microprocessor	
70	XRST	I	System reset. Reset at the low level.	
71	DATA	I	Serial data input from the microprocessor.	
72	XLTA	I	Latch input from the microprocessor. Latch the serial data at the trailing.	
73	VDD		Power supply treminal	
74	CLOK	I	Serial data transfer clock input from microprocessor	
75	SEIN	I	Sens input from SSP	
76	CNCI	I	Track jump numbers count signal input	
77	DATO	O	Serial data output to SSP	
78	XLTO	O	Serial data latch output to SSP. Latch at trailing.	
79	CLKO	O	Serial data transfer clock output to SSP.	
80	MIRR	I	Mirror signal input	

Note: SSP: IC101 CXA1372Q

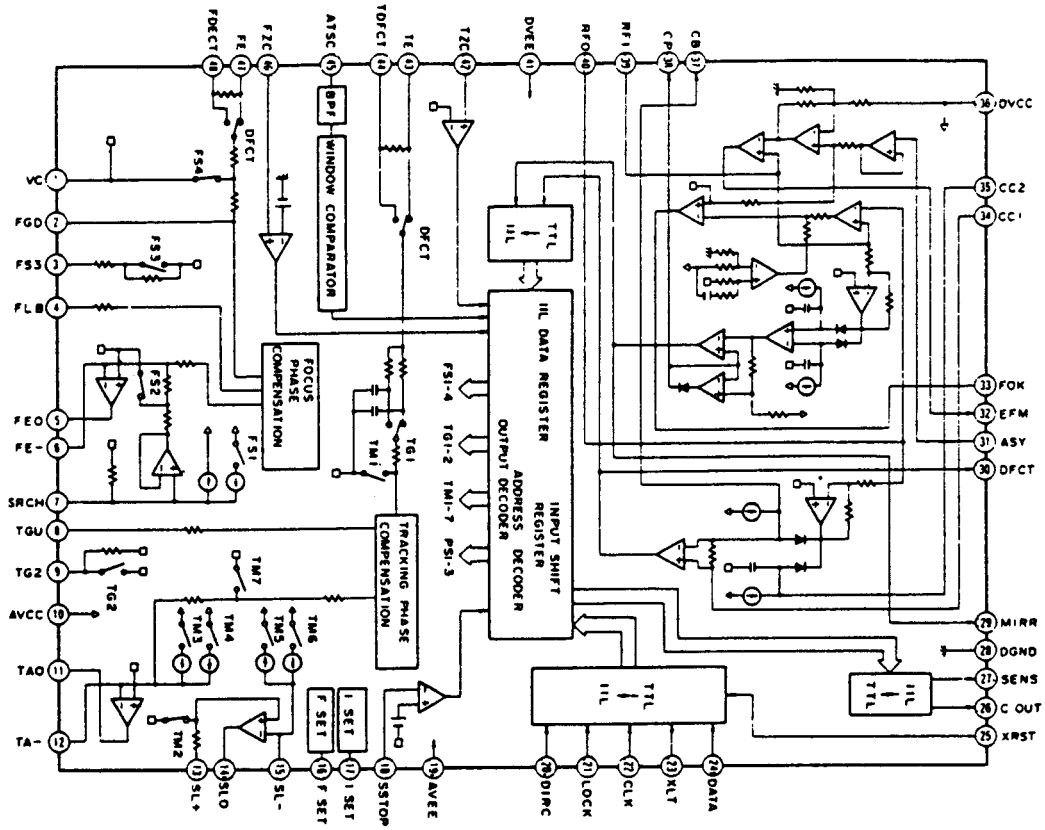
M51943ASL (System reset)



74HCU04P (Hex inverters)



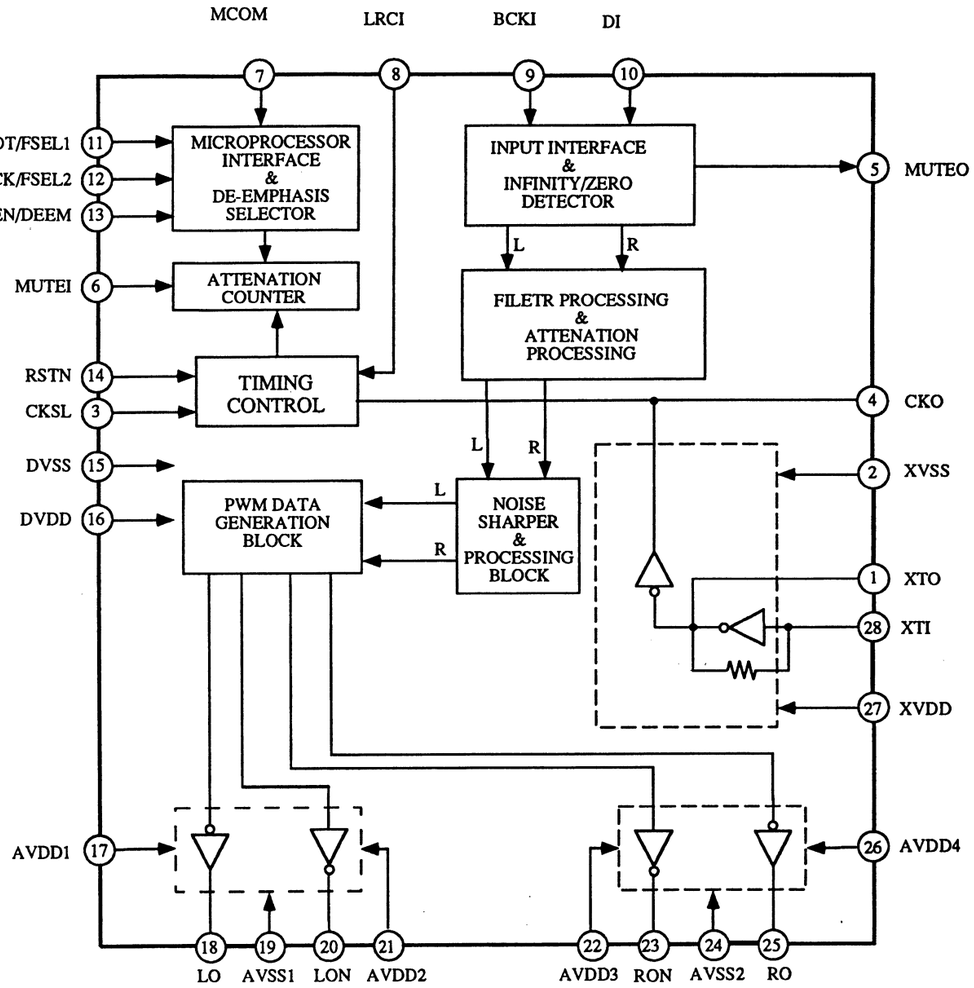
CXA1372Q (Servo Signal Processor)



PIN NO.	SYMBOL	I/O	DESCIRPION
1	VC	I	Mid-point voltage input terminal.
2	FGD	I	Connect the capacitor between FS3 and this pin when the high frequency gain focus servo is dropped.
3	FS3	I	Focus servo high frequency gain changeover input terminal.
4	FLB	I	Input terminal for the low frequency boost of focus servo.
5	FEO	O	Focus drive output terminal.
6	FE-	I	Inversion input terminal of focus amplifier.
7	SRCH	I	Time constant terminal to make the focus search waveform.
8	TGU	I	Tracking high frequency changeover input terminal.
11	TAO	O	Tracking drive output terminal.
12	TA-	I	Inversion input terminal of tracking amplifier.
13	SL+	I	No-inversion input terminal of sled amplifier.
14	SLO	O	Sled drive output terminal.
15	SL-	I	Inversion input terminal of sled amplifier.
16	FSET	I	Peak setting input of phase correction of focus tracking.
17	ISET	I	This terminal is flowed the current so that the focus search,tarcking jump,and sled kick height is decided.
18	SSTOP	I	Inner switch selection input terminal.
20	DIRC	I	This terminal is used when track jump.
21	LOCK	I	The sled runaway prevention circuit operates at the low level.
22	CLK	I	Serial data transfer clock input from microprocessor.

PIN NO.	SYMBOL	I/O	DESCIRPION
23	XLT	I	Latch input terminal for microprocessor.
24	DATA	I	Serial data input terminal for microprocessor.
25	XRST	I	Reset input terminal.Active low.
26	C.OUT	O	Signal output to count the track numbers.
27	SENS	O	This terminal outputs FZC,and SSTOP to according command from the microprocessor.
29	MIRR	O	Mirror comparator output terminal.
30	DFCT	O	Defect comparator output terminal.
31	ASY	I	Auto asymmetry control input terminal.
32	EFM	O	EFM comparator output terminal.
33	FOK	O	Focus OK comparator output terminal.
34	CC1	O	Defect bottom hold output terminal.
35	CC2	I	Defect bottom hold input terminal from CC1.
37	CB	I	Defect bottom hold capacitor connection terminal.
38	CP	I	Mirror hold capacitor connection terminal.
39	RFI	I	RF summing amplifier input terminal.
40	RFO	O	RF summing amplifier output terminal.
42	TZC	I	Tracking zero-cross comparator input terminal.
43	TE	I	Tracking error input terminal.
44	TDFCT	I	Capacitor connection terminal for time constant when defect.
45	ATSC	I	Window comparator input terminal for ATSC detection.
46	FZC	I	Focos zero-cross comparator input terminal.
47	FE	I	Focus error input terminal.
48	FDFCT	I	Capacitor connection terminal for time constant when defect.

SM5872CN (D/A Converter)



Pin No.	Terminal	I/O	Function	Pin No.	Terminal	I/O	Function
1	XTO	O	Resonator section	28	XTI	I	Resonator section
2	XVSS		Ground for resonator system	27	XVDD		5V for resonator system
3	CKSL	I		26	AVDD4		5V for analog section
4	CKO	O	Output clock of resonator section: 384fs	25	RO	O	R ch PWM output (+)
5	MUTEO	O	Infinity zero detector output	24	AVSS2		Ground for analog section
6	MUTEI	I	Muting output	23	RON	O	R ch PWM output (-)
7	MCOM	I	Interface switching control	22	AVDD3		5V for analog section
8	LRCI	I	Sampling rate clock of input data: H=L ch, L=R ch	21	AVDD2		5V for analog section
9	BCKI	I	Bit clock of input data	20	LON	O	L ch PWM output (+)
10	DI	I	Input data	19	AVSS1		Ground for analog section
11	FSEL1	I	Sampling frequency=44.1 kHz	18	LO	O	L ch PWM output (-)
12	FSEL2	I	When FSEL1.FSEL2, and MCOML are the low level.	17	AVDD1		5V for analog section
13	DEEM	I	De-emphasis control input	16	DVDD		5V for digital section
14	RSTN		System reset: L=Reset	15	DVSS		Ground for digital section

DISASSEMBLING PROCEDURES

1. Tray ass'y

Remove the top cover.

Remove the holder T and the retainer M.

Turn the power switch to ON.

Press the OPEN/CLOSE button to open the tray ass'y.

Remove the chucking ass'y.

Remove the stopper.

Press the tray stopper to the arrow mark direction and remove the tray ass'y.

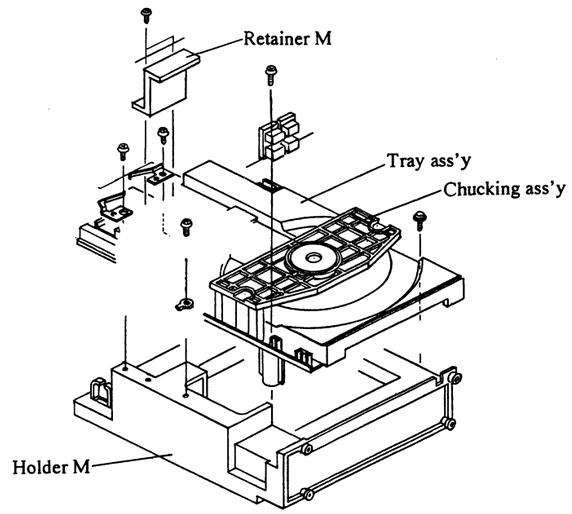


fig.1

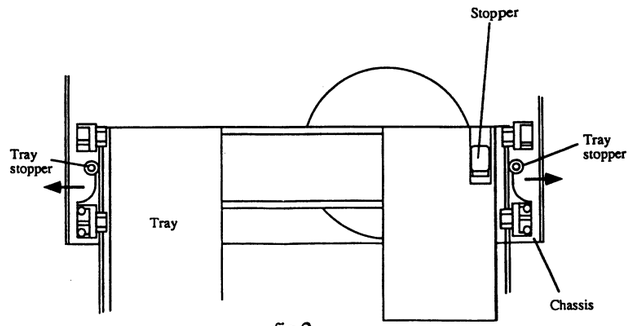


fig.2

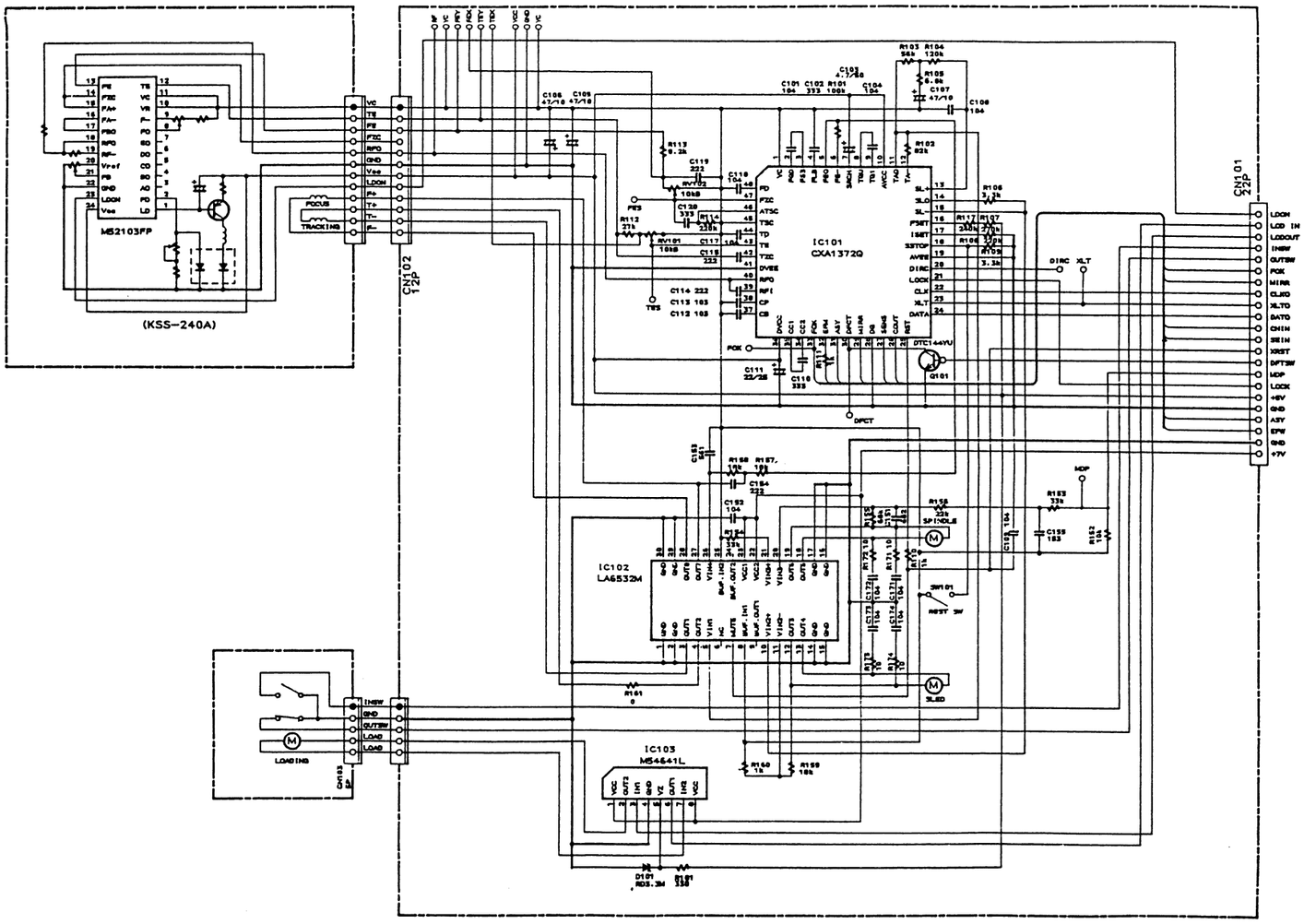
2. CD mechanism ass'y

Remove the tray ass'y.

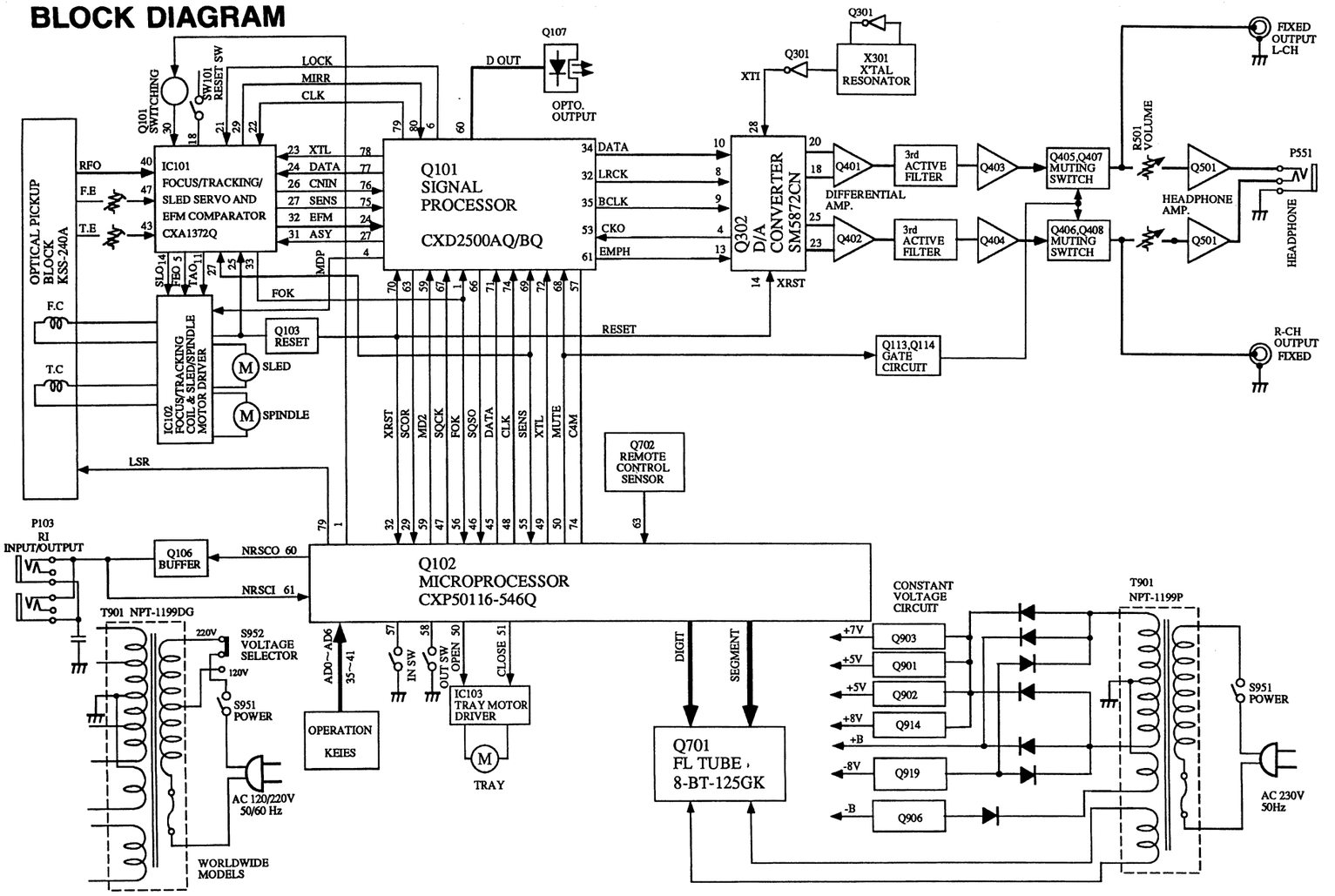
Remove the four screws holding the mechanism and the holder M.

SCHEMATIC DIAGRAM

MECHANISM BLOCK



BLOCK DIAGRAM

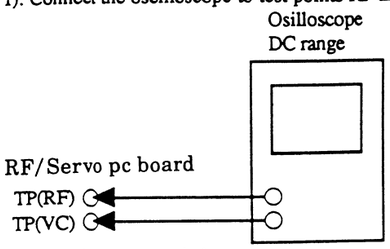


DX-7310

ADJUSTMENT PROCEDURES

It is not necessary to perform the adjustment of optical pickup.
This confirmation should be made when replacing the optical pickup.

1). Connect the oscilloscope to test points RF and VC.



2). Turn the power switch on.
3). Load the test disc YEDS-18 on the tray and press the play button.
4). Confirm that the waveform on the oscilloscope is optimum eye pattern and optimum level as shown photo 1.
Optimum eye pattern means that shape "◇" can be clearly distinguished at the center of the waveform.

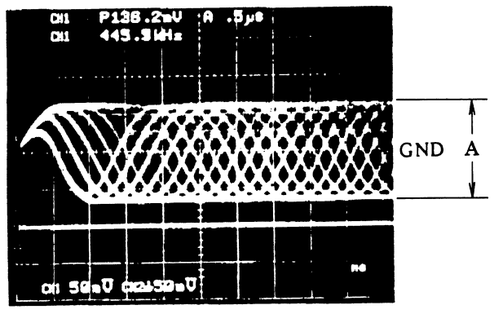


Photo 1

A=1.2±0.3Vp-p

REFERENCE

Focus/Tracking Gain Adjustment

A frequency response analyzer is necessary in order to perform this adjustment exactly.

However, this gain has a margin, so even if it is slightly off, there is no problem. Therefore, do not perform this adjustment.

Focus/tracking gain determines the pick-up follow-up (vertical and horizontal) relative to mechanical noise and mechanical shock when the 2-axis device operate.

However, as these reciprocate, the adjustment is at the point where both are satisfied.

- When gain is raised, the noise when the 2-axis device operates increases.
- When gain is lowered, it is more susceptible to mechanical shock and skipping occurs more easily.
- When gain adjustment is off, the symptoms below appear.

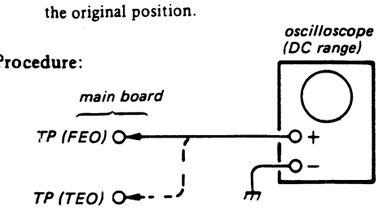
Symptoms \ Gain	Focus	Tracking
• The time until music starts becomes longer for STOP →▷PLAY or automatic selection (⏮ ⏭ buttons pressed. (Normally takes about 2 seconds.)	low	low or high
• Music does not start and disc continues to rotate for STOP→▷PLAY or automatic selection (⏮ ⏭ buttons pressed.)	–	low
• Disc table opens shortly after STOP→▷PLAY.	low or high	–
• Sound is interrupted during PLAY. Or time counter display stops progressing.	–	low
• More poise during 2-axis device operation.	high	high

The following is a simple adjustment method.

– Simple Adjustment –

Note: Since exact adjustment cannot be performed, remember the positions of the controls before performing the adjustment. If the positions after the simple adjustment are only a little different, return the controls to the original position.

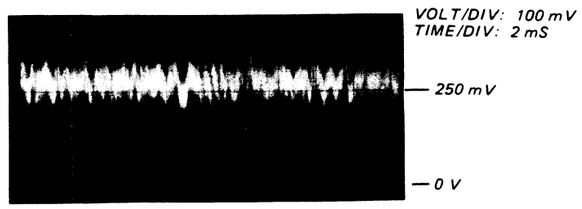
Procedure:



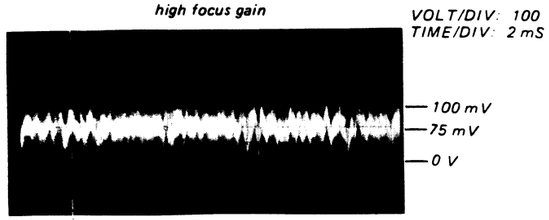
1. Keep the set horizontal.
(If the set is not horizontal, this adjustment cannot be performed due to the gravity against the 2 axis device.)
2. Insert disc (YEDS-18) and press ▷PLAY button.
3. Connect oscilloscope to main amp board TP (FEO).
4. Adjust RV103 so that the waveform is as shown in the figure below. (focus gain adjustment)

- Incorrent Examples (DC level changes more than on adjusted waveform)

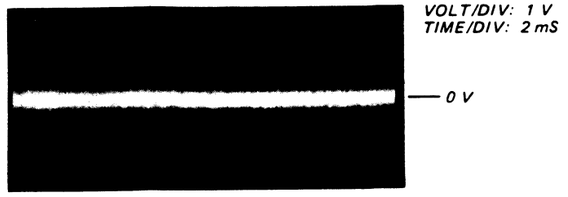
low focus gain



high focus gain



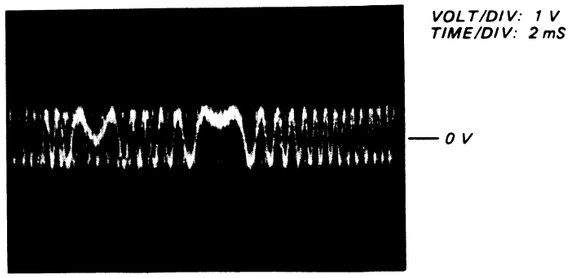
5. Connect oscilloscope to main board TP (TEO).
6. Adjust RV104 so that the waveform is as shown in the figure below. (tracking gain adjustment)



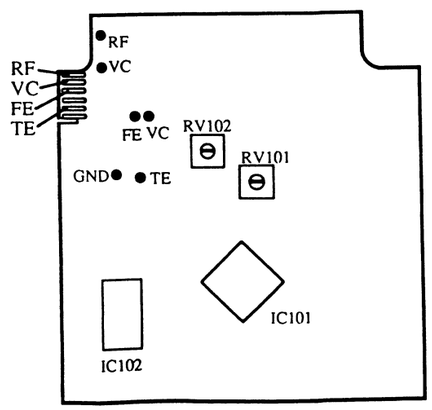
- Incorrect Examples (fundamental wave appears)

low tracking gain

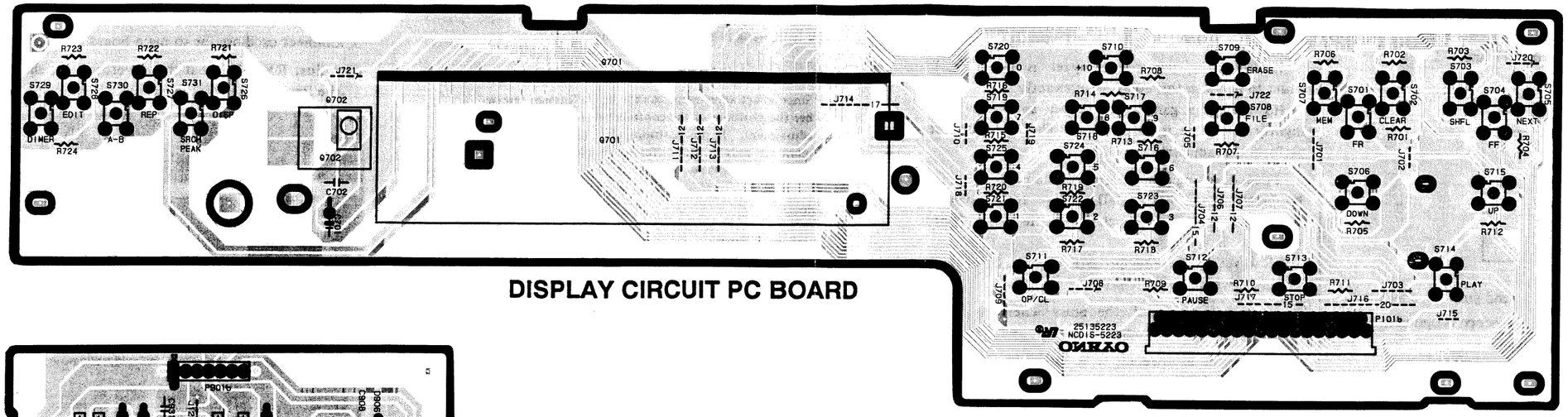
high tracking gain
(higher fundamental wave than for low gain)



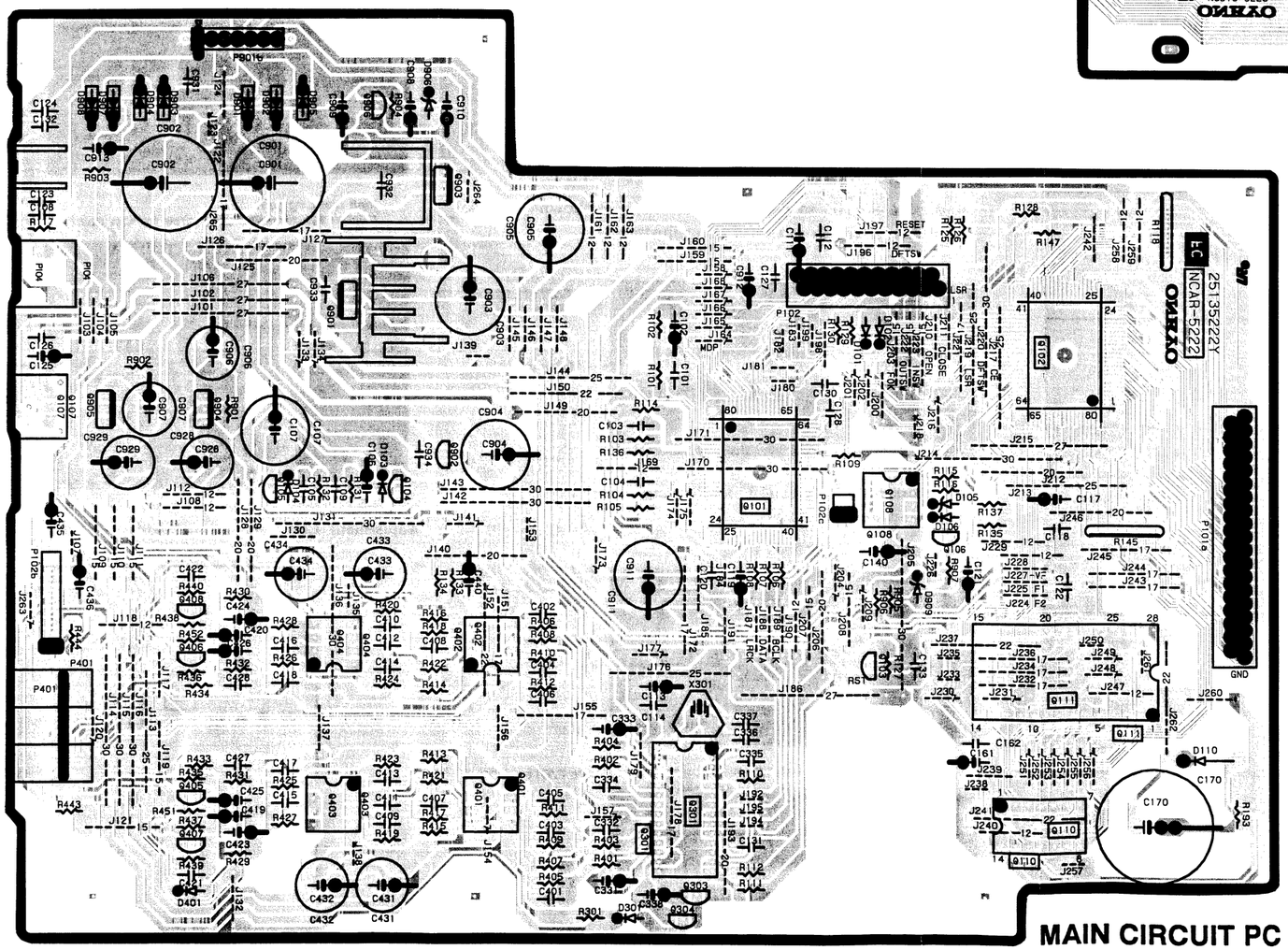
Adjustment Location: main board



PRINTED CIRCUIT BOARD VIEW FROM BOTTOM SIDE



DISPLAY CIRCUIT PC BOARD


P901a
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P401
P102a
P102b
P102c
P102d
P102e
J263
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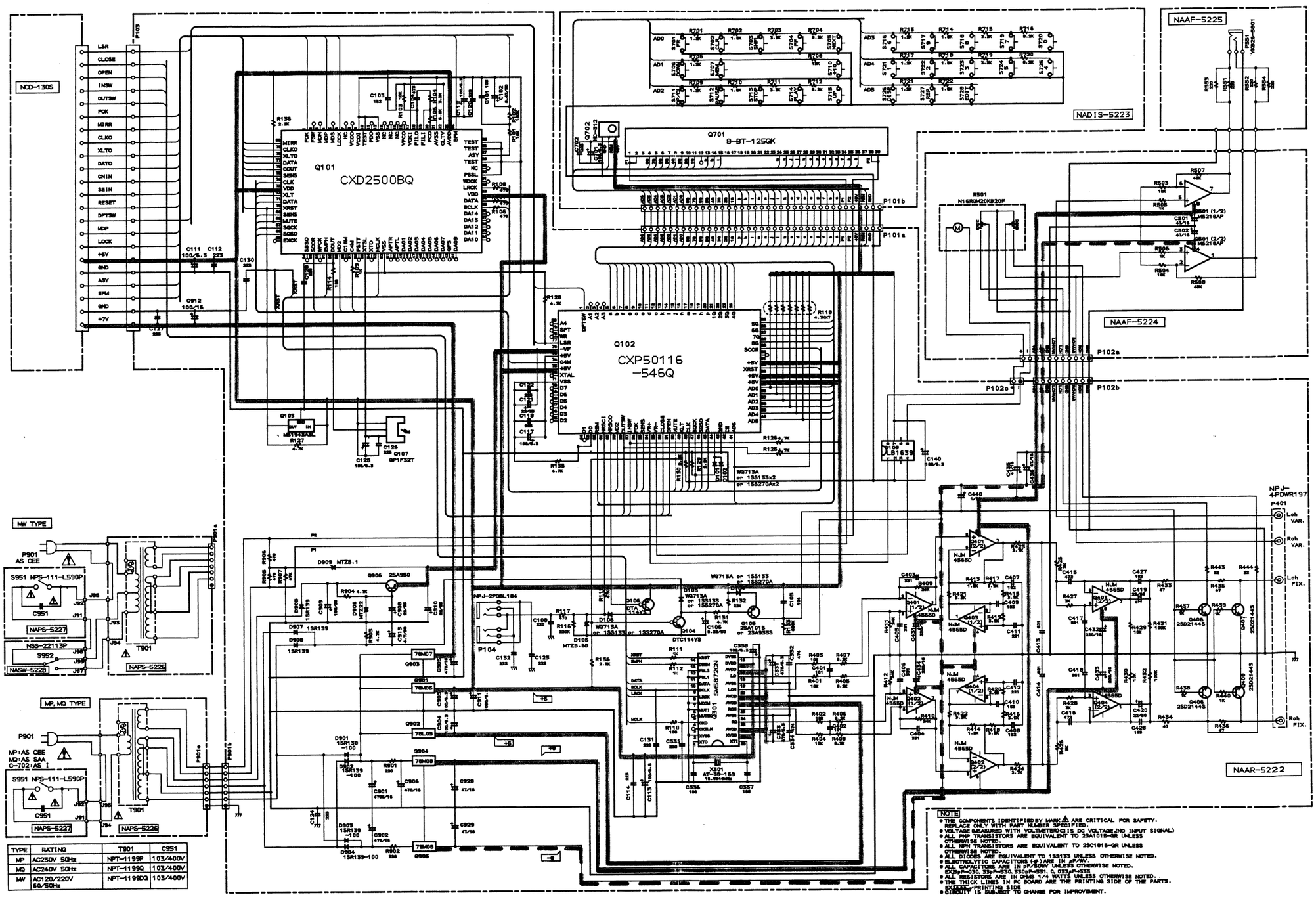
SCHEMATIC DIAGRAM



NOTE

- THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR SAFETY. REPLACE ONLY WITH PART NUMBER SPECIFIED.
- VOLTAGE MEASURED WITH VOLTMETER(>10 DC VOLTAGE)NO INPUT SIGNAL)
- ALL PNP TRANSISTORS ARE EQUIVALENT TO 2SA1015-GR UNLESS OTHERWISE NOTED.
- ALL NPN TRANSISTORS ARE EQUIVALENT TO 2SC1815-GR UNLESS OTHERWISE NOTED.
- ALL DIODES ARE EQUIVALENT TO 1SS133 UNLESS OTHERWISE NOTED.
- ELECTROLYTIC CAPACITORS (μF) ARE IN μF/50V.
- ALL CAPACITORS ARE IN pF/50WV UNLESS OTHERWISE NOTED. EX)3p=3.5D, 33p=33D, 330p=331, 0.033μ=333
- ALL RESISTORS ARE IN OHMS 1/4 WATTS UNLESS OTHERWISE NOTED.
- THE THICK LINES IN PC BOARD ARE THE PRINTING SIDE OF THE PARTS. SOLDER-PRINTING SIDE
- CIRCUIT IS SUBJECT TO CHANGE FOR IMPROVEMENT.

PRINTED CIRCUIT BOARD – PARTS LIST

Main circuit PC Board (NAAR-5222-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Semiconductors	
Q101	22240487A	CXD2500BQ
Q102	22240753	CXP50116-546Q
Q103	22240018	M51943A
Q104	221281	DTC114YS
Q105	2213355 or	2SA933S-S or
	2211455	2SA1015-GR
Q106	2213090	DTA114YS
Q107	24120038	GP1F32T, OPT MOD
Q108	22240322	LB1639
Q301	22240726	SM5872CN
Q401-404	22240191	NJM4565D-D
Q405-408	2214281	2SD2144S-U
Q901	222780055MIT	M5F78M05L
Q902	222780053	78L05
Q903	222780075MIT	M5F78M07L
Q904	222780085MIT	M5F78M08L
Q905	222790085MIT	M5F79M08L
Q906	2211504	2SA950-Y
D101-104,	223222	WG713A
D106	223205	1SS270A
	223163	1SS133
D105	224450562	MTZ5.6B, Zener
D901-905,	22380032	1SR139-100
D907,908		
D906	224452202	MTZ22B, Zener
D909	224450512	MTZ5.1B, Zener
	Coils	
X301	3010159	AT-38-169, CRYSTAL
	Capacitors	
C101	374721034	ECQ-B50V, 103J, TF C
C103	374721524	ECQ-B50V, 152J, TF C
C104	374724734	ECQ-V50V, 473J, TF C
C105	374721044	ECQ-V50V, 104J, TF C
C332,334	374724744	ECQ-V50V, 474J, TF C
C407,408	374721824	ECQ-B50V, 182J, TF C
C409,410	374721034	ECQ-B50V, 103J, TF C
C413,414	374728214	ECQ-B50V, 821J, TF C
C415,416	374724724	ECQ-B50V, 472J, TF C
C427,428	374721034	ECQ-B50V, 103J, TF C
C901	393344727	CE04W16V, 4700M, VX C
	Resistors	
R118	49163472407	RM1/10IJ, 4.7K*7, R NET
R901,902	443622214	RS1WBJ, 220, METAL O R

CIRCUIT NO.	PART NO.	DESCRIPTION
	Switches,Terminals	
P101a	25050866 or	NSCT-37P661 or
	25050977	NSCT-37P764, SOCKET
P103	25050854 or	NSCT-22P649 or
	25050962	NSCT-22P749, SOCKET
P104	25045330	NPJ-2PDBL184, JACK
P401	25045397	NPJ-4PDWR222, PIN JACK
P901b	25051111	NSCT-7P898, WIRE HOL

Display circuit PC Board (NADIS-5223-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Semiconductors	
Q701	212109	8-BT-125GK, FL TUBE
Q702	24130010	HC-312, REMO SENS
	Switches,Terminals	
S701-707,	25035548	NPS-111-S510, P SW
S710-728		
P101b	25050898	NSCT-37P693, SOCKET
	25050943	NSCT-37P730, SOCKET
	27190754AY	HOLDER(FL)

Headphone amplifier PC Board (NAAF-5224-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Semiconductor	
Q501	22240369	M5218AP
	Resistor	
R501	5104327Y	N16RGM20KB20F, VARI R

Power switch PC Board (NAAF-5225-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminal	
P551	25045441	YKB26-5801, JACK

Power transformer PC Board (NAPS-5226-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Terminals	
	25060092	NTM-1S33, TRM
P901A	25051111	NSCT-7P898, WIRE HOL

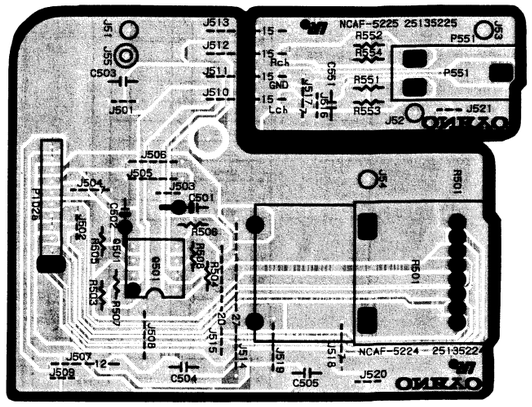
Voltage selector switch PC Board (NAPS-5227-1)

CIRCUIT NO.	PART NO.	DESCRIPTION
	Capacitor	
C951	⚠ 3500065A	DE7150FZ103P, AC400V/125V, IS C
	Switch	
S951	⚠ 25035636	NPS-111, -L590P, P SW

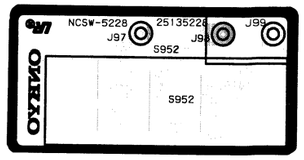
Mechanism PC Board

CIRCUIT NO.	PART NO.	DESCRIPTION
IC101	24840089	CXA1372AQ,IC
IC102	22240551	LA6532M-T1,IC
IC103	22240101	M54641L,IC
RV101,102	24840085	10K,Trim resistor
SW101	2480070	Leafswitch
CN101	24840072	Connector
CN102	24840071	Connector socket

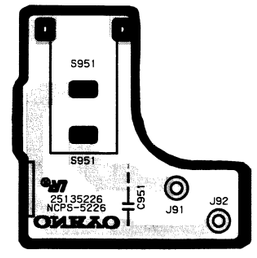
NOTE: THE COMPONENTS IDENTIFIED BY MARK ⚠ ARE CRITICAL FOR RISK OF FIRE AND ELECTRIC SHOCK. REPLACE ONLY WITH PART NUMBER SPECIFIED.



HEADPHONE PC BOARDS

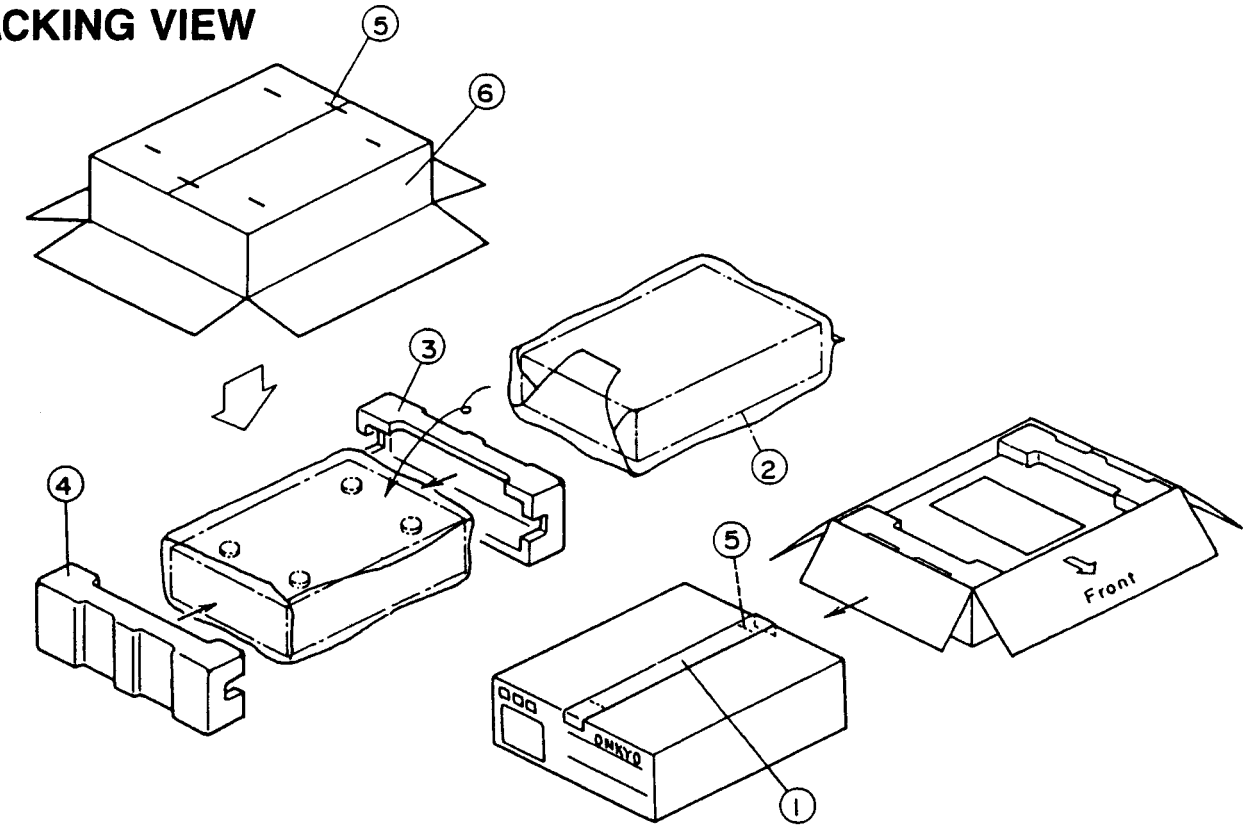


VOLTAGE SELECTOR SWITCH PC BOARD



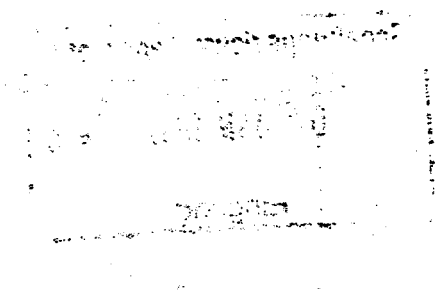
POWER SWITCH PC BOARD

PACKING VIEW



REF NO.	PART NO.	DESCRIPTION
1	29110071	50×60cm, PP tape
2	2910037-1Y	650×500mm,Styrene bag
3	29091637-1AY	Pad R
4	29091636-1AY	Pad L
5	282321	Staple
6	29052850Y	Master carton box
	Accessary bag ass'y	
	2010244Y	Connection cable
	2010200	Connection cable for remote control
	24140278Y	RC-278C,Remote control transmitter
	3010054	UM-3,Two batteries
	29342102Y	Instruction manual<P>
	29342103Y	Instruction manual<W>
	29100097-1Y	350×250mm,Styrene bag
	25055040	CV-K-2,Conversion plug<W>

NOTE:
<P>:230V model only
<W>:World wide model only



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